REMARKS

Applicants respectfully request that the references cited in the Information Disclosure Statement (IDS), filed with this Amendment and with the Request for Continued Examination (RCE), be fully considered.

Applicants also respectfully traverse the Examiner's contention that the polypropylene protective films taught by Taguchi would inherently have the same number of "fish eyes" as recited in the claims. Specifically, Applicants point out below, with evidentiary support, that (a) the number of "fish eyes" included in a polypropylene film is dependent upon the method of manufacturing of the polypropylene film, and (b) not all polypropylene films inherently include the low number of "fish eyes" recited in the instant claims. In support of Applicants' position, filed herewith is the expert opinion of Mr. Chikara Ishikawa (See Ishikawa's Second Declaration under 37 C.F.R. § 1.132, hereafter referred to as the "Ishikawa's Second Declaration").

Lastly, Applicants point out the Examiner has failed to consider the further patentable limitation of claims 39-41, wherein "the protecting film...is made of resin filtered after thermal melting." Also, the Examiner has failed to consider the further patentable limitation of claims 42 and 43 wherein a "photosensitive resin composition...comprises: ...a monomer having at least one poloymerizable ethylenically unsaturated group in the molecule thereof, wherein the monomer is bishphenol A polyoxyalkylene diacrylate, or contains bisphenol A polyoxyalkylene dimethacrylate as a component."

Applicants respectfully request that the Examiner consider each and every element recited in the claims.

The Rejections

Claims 1-10, 13-19, 21-25 and 28-43 stand rejected under 35 U.S.C. § 102(b) as anticipated by Taguchi (U.S. Patent 4,360,582). Claims 12 and 27 stand rejected under 35 U.S.C. 103(a) as unpatentable over Taguchi (U.S. Patent 4,360,582) in view of Hoffman (U.S. Patent 4,710,446).

Applicants respectfully traverse the rejection and request reconsideration of the present application for the following reasons.

The Invention

The present invention provides a photosensitive film usable in metal etching fabrication of lead frames, metal masks, and the like, with reduced generation of air voids which cause formation of defective patterns and breakage of wire. The problem solved by the present invention is to reduce the formation of air voids on a substrate, such as a metal, after removing the protecting film from the photosensitive resin layer formed on a support film. The present inventors have found for the first time that such air voids are caused by very fine fish eyes, difficult to find with the naked eye, in the protecting film in the photosensitive film.

Furthermore, formation of air voids is related to film thickness of the photosensitive layer, so a thinner photosensitive resin layer results in more air voids. This finding is important to the present invention.

In accordance with the present invention, a first embodiment is provided having the elements recited in claim 1, a second embodiment is provided having the elements recited in claim 19, a third embodiment is provided having the elements recited in claim 36, a fourth

embodiment is provided having the elements recited in claim 38, a fifth embodiment is provided having the elements recited in claim 42, and a sixth embodiment is provided having the elements recited in claim 43. Each of these embodiments is directed to a photosensitive film wherein "the number of fish eyes having a diameter of at least 80 μm included in said protecting film" does not exceed "5 fish eyes/m^2 when measured under a microscope at a multiplication of 100," and each of these embodiments require the photosensitive resin layer to have a "film thickness of 5 to 50 μm."

Various other embodiments are recited in the dependent claims. One important advantage of the photosensitive films, in accordance with the present invention, is the size and number of fish eyes in the fish eye population. The relatively small and few fish eyes in the protecting film of the photosensitive films of the present invention improve quality and yield of semiconductor elements when manufacturing semiconductor elements.

Applicants' Arguments

The Examiner's rejections are all predicated on the notion that the "protecting film (C) would have the same number of fish eyes at the given diameter no matter how it is evaluated" (Office Action, dated January 11, 2005, at 2, lines 2-7; and Office Action, dated March 24, 2004, at 2, lines 11-16). From this erroneous factual predicate, the Examiner concludes that the limitation wherein "the number of fish eyes having a diameter of at least 80 μm included in said protecting film (C) does not exceed 5 fish eyes/m^2 when measured under a microscope at a multiplication of 100" does not further limit the claims.

The Examiner's conclusion is untenable for the plain reason that whatever measurement tool is used to quantify the population of fish eyes per square meter will have a

degree of measurement error. Therefore, when the claims recite the use of a particular measurement tool for characterizing the fish eye population, comparison of fish eye defects with other materials is meaningful primarily when comparable methods of measuring fish eyes have been employed. Otherwise, no meaningful comparison in numerically quantified fish eye defects can be made between different films (See Ishikawa's Second Declaration, §§ 20 and 21).

Thus, for the reasons explicitly set forth in Amendment (G), filed September 24, 2004, at 15, line 16, to at 19, line 4, which is incorporated herein by reference, the recitation of "the number of fish eyes having a diameter of at least 80 μm included in said protecting film (C) does not exceed 5 fish eyes/m^2 when measured under a microscope at a multiplication of 100" such as recited in claim 1 does further limit the claims. As is discussed below, for example, fish eyes of at least 80 μm, because they are at the limits of visual acuity, may not be seen at all without magnification. Thus, the difference between the number of fish eyes seen by the naked eye and those seen at 100 times magnification may be quite significant. For example, a sheet may show no fish eyes with the naked eye and many fish eyes at 100 times magnification.

The Prior Art Rejections

Anticipation under 35 U.S.C. § 102 requires showing the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim. Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984).

On the other hand, a patentability analysis under 35 U.S.C. § 103 requires (a) determining the scope and content of the prior art, (b) ascertaining the differences between the prior art and the claimed subject matter, (c) resolving the level of ordinary skill in the pertinent art, and (d) considering secondary considerations that may serve as indicia of nonobviousness or obviousness. Graham v. John Deere Co. of Kansas City, 148 U.S.P.Q. 459, 467 (1966). Furthermore, a proper rejection under Section 103 further requires showing (1) that the prior art would have suggested to a person of ordinary skill in the art that they should make the claimed device or carry out the claimed process, (2) that the prior art would have revealed to a person of ordinary skill in the art that in so making or doing, there would have been a reasonable expectation of success, and (3) both the suggestion and the reasonable expectation of success must be found in the prior art and not in the applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991).

With these rules in mind, the Applicants address the Examiner's rejections of the present claims.

The Section 102 Rejection

The Examiner contends that U.S. Patent 4,360,582 to Taguchi (hereafter, the Taguchi Patent) teaches all of the subject matter of claims 1-10, 13-19, 21-25 and 28-43. Applicants strongly disagree.

The Taguchi Patent teaches a "photopolymerizable element" for producing photoresists used in manufacturing printed circuit boards that includes: (1) a layer of a photopolymerizable composition, (2) a film support laminated to the composition layer and optionally (3) a strippable protective film (see Abstract). The thickness of the composition

layer is 0.1 to 1,000 μ (col. 9, lines 15-19) with the thickness of the film support being 5 to 100 μ (col. 9, lines 20-22) and the thickness of the protective film being 8 to 80 μ (col. 10, lines 22-23). Numerous materials are available for making the protective layer, but there is no mention of using low quality LDPE.

More specifically, the Taguchi Patent teaches that the protective film is provided on one surface of the photopolymerizable layer and the film support is laminated onto the other surface, wherein the protective layer is used for preventing blocking at the winding step and adhesion of dust during handling (col. 3, lines 62-68). The Taguchi Patent teaches that the film support is a transparent film capable of being dissolved or dispersed in a developer, and that the film support is selected from the group consisting of methyl methacrylate homopolymer and copolymers, vinyl chloride homopolymer and copolymers, polyvinyl alcohol, and mixtures thereof (col. 4, lines 51-62). The Taguchi Patent teaches the use of trimethylolpropane trimethacrylate as a photopolymerizable monomer for making a photopolymerizable layer, but that other materials such as the methyl methacrylate homopolymer and copolymer and a list of other compounds would be used as an organic polymer binder (col. 5, line 27, to col. 6, line 23).

The Taguchi Patent teaches that the use of polyethylene terephthalate as the film support has certain disadvantages, such a tendancy for the photosensitive layer to be destroyed when stripping the film support when the thickness of the photosensitive layer is reduced (col. 2, line 38, to col. 3, line 8). The Taguchi Patent also teaches that the protective film could be selected from a polyethylene terephthalate film, a polypropylene film, a polyethylene film, a cellulose triacetate film, a cellulose diacetate film, a polyamide film, a

polytetrafluoroethylene film, a paper, a polyethylene-laminated paper and a polypropylene-laminated paper (col. 10, lines 15-24).

It is important to note that Taguchi teaches that the protective film (10), such as shown in Figure 4, is an optional feature of the photopolymerizable element (col. 14, lines 57-60). Furthermore, it is important to note that while Taguchi provides certain examples of a photosensitive element utilizing the optional protective film, these examples focus primarily on the use of a polyethylene film (col. 18, lines 9-52).

Furthermore, the Taguchi Patent explains the use of the photopolymerizable element referred to in Figures 1 to 9 (col. 14, line 43, to col. 15, line 35). As shown in Figure 5, the protective film (10), (e.g., a polypropylene film) is peeled off and the surfaces of the photopolymerizable layers (9) and (12) are applied to both surfaces of the copper-clad insulating substrate, whereby at least both openings of each of the through-holes (4), (5) are covered with the photopolymerizable layers (9) and (12), (See Fig. 5 and col. 14, line 59, to col. 15, line 1). The diameter of the through-holes (4) and (5), which have no relation to the fish eyes, are by far larger than the size of fish eyes. In view of these teachings, it is evident that the Taguchi Patent is not addressing the problem solved by the present invention.

As admitted by the Examiner (Office Action, dated November 21, 2001, at 5, lines 7-8), the Taguchi reference does not teach "explicit details pertaining to the protective film" such as a protecting layer that has the number of fish eyes having **a diameter of at least 80 μm that does not exceed 5 fish eyes/m^2** when measured under a microscope at a multiplication of 100. The Examiner reiterates in the outstanding Office Action, and in previous Office Actions, that "Taguchi is silent on fish eyes" (Office Action, dated January 11, 2005, at 3, line 11; and Office Action, dated March 24, 2004, at 4, line 1).

The Examiner contends that even though the Taguchi Patent is completely silent with respect to the claimed "fish eyes" limitation, such a feature would be an inherent feature to the device taught by Taguchi because Taguchi teaches the use of a polypropylene protective film (Office Action, dated January 11, 2005, at 3, lines 11-13; and Office Action, dated March 24, 2004, at 4, lines 1-3). However, the Examiner's inherency argument is untenable for the following reasons.

Section 102 and Inherency

The Federal Circuit has ruled that inherency may not be established by probabilities or possibilities, and the mere fact that a certain thing may result from a given set of circumstances is not sufficient to establish inherency. Continental Can Co. USA Inc. v. Monsanto Co., 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991). Instead, the teachings of the disclosure must be sufficient to show that the inherent feature would be the "natural result" flowing from what is taught. Id.

In the present case, the Taguchi Patent is not only silent with respect to "fish eyes," it is also completely silent with respect to "air voids" and any other defects related to imperfections in the protective layer. Instead, the authors of the Taguchi Patent focus on non-uniform adhesion between the photosensitive layer and a substrate, which results in damage to the photosensitive layer when the film support is stripped therefrom (col. 2, lines 48-55).

The disclosure of the Taguchi Patent is insufficient to establish that the protective films it discloses would naturally have "fish eyes having a diameter of at least 80 μm included in the protecting film" in numbers that "does not exceed 5 fish eyes/m^2 when measured under a microscope at a multiplication of 100," as required by independent claims 1, 19, 36, 38, 42

and 43, because (i) not all polypropylene protecting films inherently have the required fish eye population, (ii) the instant specification describes at least one special method for making protecting films with the claimed number of fish eyes, and (iii) a polypropylene film randomly selected from conventionally-made films is unlikely to include the claimed number of fish eyes (See Ishikawa's Second Declaration, §§ 18 and 19).

First, the present application clearly establishes that not all polypropylene films inherently have the claimed number of fish eyes. Specifically, while the polypropylene films, PP-type PT and E 200C, used in Examples 1 and 4, respectively, in accordance with the presently claimed invention are provided with fish eye populations of $0/m^2$ for fish eyes ≥ 80 μm, the polypropylene film PP-Type R used in Comparative Example 2 includes 1200 fish eyes/ m^2 (See Table 2, at 19). Therefore, it is established that not all polypropylene films will have the number and size of fish eyes recited in the claims of the instant application. This fact is also supported by the testimony of Mr. Chikara Ishikawa, who is an expert in the field of the present invention and who states it is a fact known to those of ordinary skill in the art that not all polypropylene films will inherently include the claimed number of fish eyes (See Ishikawa's Second Declaration, § 14).

In other words, polypropylene protective films do not inherently include the "number of fish eyes having a diameter of at least 80 μm included in said protecting film (C) [that] does not exceed 5 fish eyes/m^2 when measured under a microscope at a multiplication of 100" as recited in the independent claims. This is a fact, grounded in the Applicants' disclosure.

Second, the present specification, at 14, lines 12-16, teaches that "protecting films" made in accordance with the present invention have the recited "fish eye" population because they are produced using specifically modified methods of film production, such as methods

filtering the raw material resin after thermal melting. More specifically, the specification as originally filed explains that fish eyes form due to unmelted particles of raw material, or due to formation of thermally deteriorated regions, when raw material is thermally melted and kneaded (See Specification, at 3, lines 2-28). The specification also points out that special steps can be preformed, such as filtering of resin after thermal melting, in order to remove unmelted particles (See Specification, at 14, lines 12-16). The present specification then goes on to list multiple commercially available polypropylene films that meet the "fish eye" population requirement (See present specification, at 14, lines 17-22).

On the other hand, the Taguchi Patent is completely silent with regards to the fish eye population of the polypropylene films, and this disclosure provides no teaching, or suggestion, regarding (a) the filtering of resin after thermal melting of the raw material, or (b) the selection of one of the polypropylene films listed by the present application, or (c) the application of any other special manufacturing process for preventing the formation of fish eyes in the protective film (See Ishikawa's Second Declaration, §§ 10-13).

Third, Applicants have previously presented, in Amendment (G), filed September 24, 2004, at 23, line 4, to at 24, last line, further evidence grounded in the prior art that polypropylene films do not necessarily have the limitation to "fish eyes" recited in the present claims. In particular, evidence of this fact was previously proffered from "Plastic Films – Processing and Application (2nd Ed.)" edited by Toshiaki Okiyama, at 88-91 and 242-243 (hereafter, the "Plastic Films textbook"). This textbook teaches there are multiple film forming methods as compiled in Table 2.12 at 89, reproduced in English below for the Examiner's convenience.

Table 2.12 Film-forming methods of polypropylene film

1) Inflation method
2) T-die method (or cast film)
3) Stretching method
   - Biaxial stretching
     - Equal stretching (balance type)
     - Biased stretching (unbalance type)...slightly
   - Monoaxial stretching (stretched tape)

The Plastic Films textbook teaches that different film properties result depending upon the film-forming method used. In Table 4.40 of the Plastic Films textbook the properties of polypropylene films are compared between films produced by casting and those produced by biaxial stretching. Table 4.40 at 243 of the Plastic Films textbook is reproduced below, in English, for the Examiner's convenience.

Table 4.40 Properties of Polypropylene Films

Film-forming method	Casting	Biaxial stretching
Specific gravity	0.885 – 0.895	0.902 – 0.907
Tensile strength (kg/mm^2)	3.2 – 7.0	8.4 –23.2
Breaking extension (%)	500 - 1000	20 - 200
Tear propagation strength (g/25 μ)	Longitudinal 600 Traverse 25	7 - 20
Impact strength (kg cm (25 μ))	1 - 3	12 - 20

In view of the multiple film-forming methods available, and the heterogeneous properties that result depending upon which film-forming method is used, it would be clear to a person skilled in the art that film characteristic pertaining to the formation of "fish eyes" would be dependent upon the film-forming method used. The application of polypropylene to Example 1 provided in the Taguchi Patent includes no description as to the manufacture, production conditions, and other variables, which would effect the formation of the "fish eye" population of the film. Therefore, even for a person skilled in the art, it is impossible to determine what kind of polypropylene, with what kind of properties, was used in the Taguchi Patent (Ishikawa's Second Declaration, § 16, first two sentences).

In other words, there is absolutely no teaching in the Taguchi Patent sufficient to establish that the protective films described in col. 10, lines 15-23, of the reference have been in any way specially modified to ensure that "fish eyes having a diameter of at least 80 μm included in the protecting film" in numbers that "does not exceed 5 fish eyes/m^2 when measured under a microscope at a multiplication of 100" have been provided. There is no clear and reasonable basis, based on the Taguchi Patent, to support the Examiner's conclusion that the polypropylene protective film taught by Taguchi would inherently have the claimed population of "fish eyes."

Despite these deficiencies in the teaching of the Taguchi Patent, the Examiner relies on Taguchi's teaching of a strippable polypropylene film (col. 16, lines 59-63, and col. 17, lines 32-36) for the premise that a polypropylene film will inherently have "fish eyes having a diameter of at least 80 μm included in the protecting film" in numbers that "does not exceed 5 fish eyes/m^2 when measured under a microscope at a multiplication of 100" as required by the claims of the present application. The Examiner's premise is untenable for all of the above reasons.

In contrast, Applicants' position is firmly grounded in evidence based on the art, and in further support thereof, by the Ishikawa's Second Declaration, which provides an expert opinion establishing: (a) the Taguchi Patent is completely silent regarding the number of fish eyes in the polypropylene protecting films taught therein; and (b) the Taguchi Patent lacks a disclosure sufficient to show what fish eye population would be the natural result flowing from its teachings as evident by (c) the polypropylene protecting film "PP-Type R," manufactured by the Shin-Etsu Film Co., which shows not all polypropylene protecting films inherently have the claimed fish eye population (i.e., the number of fish eyes having a diameter of at least 80 μm

does not exceed 5 fish eyes per m^2), and (d) as described in the specification of the above-captioned application, polypropylene protecting films having the required number of fish eyes are specially prepared using more involved manufacturing methods (i.e., including a resin filtering step to filter unmelted raw material from the resin) than are typically used, or are specifically selected polypropylene films (i.e., Torayfan BO-2400 or ALPHAN E200 Series polypropylene films), and (e) randomly selected polypropylene films, either prepared under run-of-the-mill conditions, or selected randomly without regard to the method of film formation, are unlikely to have a fish eye population that meets the limitation of the present claims (See Ishikawa's Second Declaration, § 18).

In summary, the Examiner's inherency argument is untenable and must be withdrawn because (1) Applicants' disclosure and proffered expert testimony provide evidence that not all polypropylene films inherently have the claimed number of fish eyes, (2) Applicants' disclosure describes a certain manufacturing method sufficient to enable the manufacture of a protective film having the claimed number of fish eyes, and (3) the Plastic Films textbook and proffered expert testimony establish that physical characteristics of a polypropylene film, such as the number of fish eyes present, are generally affected by the manufacturing techniques employed, and the Taguchi Patent does not sufficiently disclose manufacturing techniques that would inherently result in polypropylene protecting films having the claimed number of fish eyes. For these reasons, it cannot be reasonably inferred from the teachings of the Taguchi Patent that the polypropylene films taught by Taguchi have "fish eyes having a diameter of at least 80 μm included in the protecting film" in numbers that "does not exceed 5 fish eyes/m^2 when measured under a microscope at a multiplication of 100" as recited in the independent claims.

Claims 38, 42 and 43

As admitted by the Examiner (Office Action, dated March 24, 2004, at 4, line 15-17, and at 5, lines 8-10), the Taguchi Patent does not teach, or even suggest, the subject matter of claims 11, 12, 26 and 27.

The Taguchi Patent teaches the disadvantages of polyethylene terephthalate support films (col. 2, line 38, to col. 3, line 8), and instead teaches using methyl methacrylate homopolymer and copolymers and various other materials (col. 4, lines 50-60). The Taguchi Patent actually teaches away from the use of polyethylene terephthalate support films. Therefore, the Taguchi Patent cannot anticipate the subject matter of independent claim 38, which recites "the support film is selected from the group consisting of polyester films and polyethylene terephthalate films."

In addition, the Taguchi Patent does not teach, or even suggest, that "the photosensitive resin composition in the photosensitive resin layer comprises: i. a binder polymer formed by copolymerizing acrylic acid or methacrylic acid and alkyl esters thereof as constituent monomers; ii. a monomer having at least one polymerizable ethylenically unsaturated group in the molecule thereof, wherein the monomer is bisphenol A polyoxyalkylene diacrylate, or contains bisphenol A polyoxyalkylene dimethacrylate as a component; and iii. a photopolymerization initiator" as recited in claims 42 and 43. Applicants point out that the Examiner has previously admitted that the Taguchi Patent does not teach these elements recited in claims 42 and 43 (See Office Action dated March 24, 2004, at 4, line 13, to at 5, line 5).

Thermal Melting

The Taguchi Patent does not teach, or even suggest, that "the protecting film (C) is made of resin filtered after thermal melting" as recited in claims 39 to 41. The Examiner has made no effort to show where in the Taguchi Patent this limitation is to be found.

Applicants remind the Examiner that when the PTO asserts that there is an explicit or implicit teaching in the prior art, the PTO must indicate where such a teaching appears in the reference. In re Rijckaert, 28 U.S.P.Q.2d 1955, 1957 (Fed. Cir. 1993). In the present case, the Examiner has made no effort to show where in the Taguchi Patent there is a teaching, or a suggestion, that "the protecting film...is made of resin filtered after thermal melting" as recited in claims 39-41. Consequently, the Examiner must indicate where such a teaching appears in the Taguchi Patent or withdraw the Section 102 Rejection standing against these claims.

The Section 103 Rejections

The rejections posited under 35 U.S.C. § 103 are untenable for the following reasons.

The Taguchi Patent

The Taguchi Patent has been adequately characterized above. As further admitted by the Examiner, it does not teach or even suggest that "the photopolymerization initiator (C) contains 2,4,5-triarylimidazole dimer" as recited in claims 12 and 27.

The Hatanaka Patent

U.S. Patent 6,133,343 to Hatanaka (hereafter, the Hatanaka Patent) teaches a "resinous composition for dental use," which has absolutely nothing to do with photosensitive films. More specifically, the Hatanaka Patent teaches a resinous composition for dental use that neither stains nor discolors while in use in a mouth for long periods of time, wherein the composition includes an impact-resistant resinous complex composed of (meth)acrylic polymer and core-shell structured polymer particles having at least one hard polymer, at least one soft polymer layer, and an outermost hard polymer layer (See Abstract).

The Hatanaka Patent teaches that the monomers constituting the hard polymer layer and the soft polymer layer may include poly-functional (meth)acrylates, such as bisphenol A dimethacrylate, trimethylolpropanetri(meth)acrylate, and 2,2'-di(4-methacryloxypoly ethoxyphenyl)propane (col. 3, lines 61, to col. 4, line 17, and col. 5, line 58, to col. 6, line 28). The Hatanaka Patent teaches that these poly-functional (meth)acrylates are suitable for making impact-resistant resinous complexes. The Hatanaka Patent does not teach that these polyfunctional (meth)acrylates are suitable for use as polymer, having the required sensitivity, resolution, adhesiveness and mechanical properties needed for practicing a photosensitive film in accordance with the present invention (See instant specification, page 8, lines 11, to page 9, line 25).

The Hoffman Patent

United States Patent 4,710,446 to Hoffman et al. (hereafter, the Hoffman Patent) teaches "photosensitive recording materials" for the production of lithographic printing plates or resist images that include a photosensitive, photopolymerizable recording layer, wherein

the recording layer contains a polymeric binder provided by a copolymer soluble or dispersible in aqueous medium and a comonomer (See Abstract). The comonomer is an anhydride of a polymerizable, ethylenically unsaturated monocarboxylic acid (See Abstract). The Hoffman Patent teaches that 2,4,5-triarylimidazole dimers are suitable photoinitiators for the photosensitive, photopolymerizable layers (col. 6, lines 9-37).

The Examiner's previous rejection of claims 11 and 26 (which have been rewritten in independent form as claims 42 and 43), under 35 U.S.C. § 103, in view of Taguchi in view of Hatanaka is untenable for the following reason. The Examiner's previous rejection depends upon the first premise that the Taguchi Patent teaches the use of trimethylolpropane trimethacrylate as a photopolymerizable monomer for making a photopolymerizable layer. The second premise asserted by the Examiner is that the Hoffman Patent teaches the equivalence of trimehylolpropane trimethacrylate and 2,2'-di(4-methacryloxypoly ethoxyphenyl)propane for making photopoymerizable layers (Office Action, March 24, 2004, page 4, lines 21-25). The second premise is flawed because the Hatanaka Patent teaches the equivalence of trimehylolpropane trimethacrylate and 2,2'-di(4-methacryloxypoly ethoxyphenyl)propane for making impact-resistant resinous complexes.

Because the Examiner's second premise is flawed, the Examiner's subsequent conclusion drawn therefrom is clearly erroneous. The Examiner's third premise asserted is that 2,2'-di(4-methacryloxypoly ethoxyphenyl)propane is a type of bisphenol A polyoxyalkylene dimethacrylate (Office Action, dated March 24, 2004, page 4, lines 21-23). The Examiner's line of reasoning fails to teach bisphenol A polyoxyalkylene dimethacrylate as a monomer for making photopolymerizable layers because the Hatanaka Patent teaches the equivalence of trimehylolpropane trimethacrylate and 2,2'-di(4-methacryloxypoly

ethoxyphenyl)propane for making impact-resistant resinous complexes used in dental work, and not equivalence in making photosensitive films for semiconductor manufactures. Consequently, there is no teaching grounded in the prior art, and not solely the Applicants' disclosure, teaching the use of bisphenol A polyoxyalkylene dimethacrylate as a monomer in the manufacture of a photosensitive film, in accordance with the invention recited in claims 42 and 43. The Hoffman Patent, being directed to the use of certain photoinitiators, does not make up this deficiency in the teachings of the Taguchi Patent and the Hatanaka Patent.

The Examiner's rejection of claims 12 and 27, under 35 U.S.C. § 103, in view of Taguchi in view of Hoffman is untenable for the following reason. The Taguchi Patent relates to a photopolymerizable element. The Hoffman Patent relates to photosensitive recording materials, and has nothing to do with photopolymerizable elements. There is simply nothing about the Hoffman Patent that pertains to the prevention of air voids and fish eyes. Therefore, there would be no reasonable motivation to combine the teachings of the Hoffman Patent with the teachings of the Taguchi Patent.

Conclusion

The Examiner's rejection under 35 U.S.C. § 102 is untenable and should be withdrawn because the Taguchi Patent does not teach, or even suggest, a "protecting film" having a "fish eye" population with ""the number of fish eyes having a diameter of at least 80 μm included in said protecting film does not exceed 5 fish eyes/m^2 when measured under a microscope at a multiplication of 100" as recited in independent claims 1, 19, 36, 38, 42 and 43. The Examiner's argument that the "fish eye" limitation of the presently claimed invention is inherent to the polypropylene protecting films taught by the Taguchi Patent is

untenable because (1) Applicants' disclosure and expert testimony provide evidence that not all polypropylene films inherently have the claimed number of fish eyes, (2) not all manufacturing conditions for polypropylene films necessarily produce a protective film having the claimed number of fish eyes, and (3) the Plastic Films textbook and expert testimony establish that physical characteristics of a polypropylene film, such as the number of fish eyes present, are generally affected by the manufacturing techniques employed. However, the Taguchi Patent is completely silent regarding the manufacturing conditions of the polypropylene films mentioned in this reference.

In addition, the Taguchi Patent does not teach, or even suggest, "the protecting film (C) is made of resin filtered after thermal melting" as recited in claims 39, 40 and 41. The Examiner's previous rejection of claims 11 and 26 (now independent claims 42 and 43) under 35 U.S.C. § 103 is untenable because the Hatanaka Patent does not teach equivalence of trimehylolpropane trimethacrylate and 2,2'-di(4-methacryloxypoly ethoxyphenyl)propane for making photosensitive films for semiconductor manufactures; instead, the reference reasonably teaches the equivalence of these compounds in making impact-resistant resinous complexes used in dental work. As a result, the inferences made by the Examiner in order to justify combining the teachings of the Hatanaka Patent with the teachings of the Taguchi Patent are flawed. A proper motivation to combine references cannot be justified on the basis of erroneous assumptions.

For all of the above reasons, claims 1-10, 12-19, 21-25 and 27-43 are in condition for allowance, and a prompt notice of allowance is respectfully requested.

Questions are welcomed by the below-signed attorney for applicants.

Respectfully submitted,

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